Inflammatory Bowel Disease Among College Students

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Of 52 student patients with chronic inflammatory bowel disease who were observed at Stanford University over a three-year period, 16 had Crohn disease, 17 had ulcerative colitis and 19 had ulcerative proctitis. Patients with ulcerative colitis had relatively few complications. During the study period, only two students from the entire group of 52 were obliged to interrupt college attendance because of bowel disease or complications. Of the patients, 33 were first observed on remission or attained remission during the three-year observation period. Incidence and prevalence rates for Crohn disease and ulcerative colitis were comparable with age-specific rates from other published studies. At Stanford, the high reported frequency of proctitis, which exceeded that of proximal ulcerative colitis, was possibly a reflection of the diagnostic zeal with which patients with rectal bleeding were evaluated at the student health service.

AT STANFORD UNIVERSITY, chronic inflammatory bowel disease (IBD) ranks with hypertension, peptic ulcer and juvenile onset diabetes mellitus as one of the disorders with the potential for significant disability and serious complications that are most frequently encountered among college students. This report summarizes recent experience with Crohn* disease (CD), ulcerative colitis (UC) and nonspecific ulcerative proctitis (UP) in a college population and identifies clinical and epidemiological trends for comparison with similar material from selected recent publications.

*The WESTERN JOURNAL's style regarding eponyms is that they are not written in the possesive form; therefore, Graves disease, Ewing sarcoma and Paget disease. An explanation may be found on page 78 of the July 1978 issue.

Data from numerous sources indicate that adolescents and young adults are at greatest risk for the development of IBD, and recent encounters with IBD among students at Stanford student health service reinforce this view. However, most published studies have focused on patient data derived from large clinics and hospitals, with the unavoidable tendency to record instances only of more severe or more complicated disease. For this reason alone, it appeared useful to look at the problem of IBD in a primarily outpatient setting, which is characteristic for most patient encounters in busy health services at major universities.

Subjects and Methods

From January 1, 1975, through December 31, 1977, 52 Stanford students were identified with

ABBREVIATIONS USED IN TEXT
CD=Crohn disease
IBD=inflammatory bowel disease
UC=ulcerative colitis
UP=ulcerative proctitis

the diagnosis of IBD. During this period, the student body approximated 12,500, including graduate students. Conventional diagnostic criteria[1] included characteristic sigmoidoscopic and radiologic features and, in certain instances, supportive histologic findings from biopsy material obtained at laparotomy or from rectal mucosal biopsy. In the case of UP, appropriate histories were taken to exclude the possibility of rectal trauma, and rectal cultures were ordered to exclude enteropathic infection, primarily gonococcal proctitis.

Criteria for remission among those patients with CD and UC included normal bowel habits, freedom from tenesmus and abdominal pain, absence of hematochezia, the absence of fever and other systemic complaints and, finally (when applicable), a sigmoidoscopic examination showing the absence of bleeding, exudate, friability and ulceration. The presence of mucosal thickening or granularity was not necessarily regarded as an indication of disease activity. The criteria for remission among patients with UP were absence of hematochezia and proctoscopic evidence of a normal rectal mucosa, except for thickening or granularity.

Point prevalence data were based on documentation of those students with IBD who were registered at Stanford at the conclusion of the first academic quarter (October through December) of 1975, 1976 and 1977. Incidence was obtained from tabulation of all newly diagnosed cases of IBD seen during the study period. Unless otherwise specified, both prevalence and incidence are expressed here as the number of cases per 100,000 population for comparison with data in certain publications dealing with the epidemiology of IBD.

Clinical Profile

There were 17 patients with CD, 16 with UC and 19 with UP. Clinical features of 21 of the total group have been reported in a preliminary publication.[2] Ten patients with CD were in remission at the time they were entered into the study or attained remission in the interval from

TABLE 1.—*Clinical Observations: Inflammatory Bowel Disease in Stanford Students*

	Crohn Disease	Ulcerative Colitis	Ulcerative Proctitis	Total
Sex				
Male	11	10	14	35
Female	6	6	5	17
Age*				
Mean (years)	23.0	22.0	24.0	24.0
Range (years)	18-35	17-30	19-36	17-36
Site				
Ileum alone	4	..	..	4
Ileum, jejunum	1	..	..	1
Ileum, jejunum, colon	1	..	..	1
Colon alone	4	16	..	20
Ileum, colon	7	..	..	7
Rectum alone	..	..	19	19
Complications				
Spondylitis	2	1	..	3
Perianal disease	1	..	..	1
Hemolytic anemia	..	1	..	1
Pancreatitis	1	..	..	1
Bowel perforation	1	..	..	1
Enterovesical fistula	1	..	..	1
Lactose intolerance	1	..	..	1
Medication				
Corticosteroids (systemic)	13	7	..	20
Corticosteroids (topical)	1	1	9	11
Azulfidine®	9	10	8	27
Imuran®	..	1	..	1
Surgical Procedure				
Small-bowel resection	4	..	..	4
Colectomy	2	2	..	4
Status				
Remission	10	13	10	33
Active	4	3	8	15
Unknown	3	..	1	4

*Age at time of inclusion in study.

1975 to 1977. In four patients, CD was active upon entry into the study or was reactivated during the study period. The status of three patients in this group is uncertain because of inadequate follow-up. Surgical procedures (all small-bowel resection) were required for four patients with CD, with additional partial colectomy necessary for two of them. Most patients in this group have been treated with salicylazosulfapyridine (Azulfidine®) or corticosteroids (or both); only one was obliged to interrupt college attendance because of CD or its complications during the observation period. Complications occurred more often with CD than with UC, but this difference was not significant, $X^2 = 2.12$, $P > 0.10$ (Yates' correction). With one exception, all complications occurred in patients with colonic disease, with or

without small-bowel involvement. Recurrent pancreatitis in one patient was believed to be not necessarily related to the bowel disorder. The clinical features of IBD in Stanford students are summarized in Table 1.

The 16 patients with UC had fewer complications than did those who had CD, but otherwise the course of disease was similar. During the study period, 13 achieved or maintained remission; only one of this group was obliged to interrupt college attendance. One patient had undergone colectomy before inclusion in the study, and during the summer of 1976 another student underwent colectomy because of smoldering disease and extensive pseudopolyposis.

As a group, perhaps the most interesting were the 19 patients with UP. All these patients had the symptom of intermittent or sustained rectal bleeding without a change in bowel habits; they had no systemic manifestations, and only occasionally had they experienced abdominal discomfort or tenesmus. Proctoscopic examination showed one or more areas of mucosal abnormality, but these were sharply confined to the rectum. Frank ulceration was unusual: in most patients there was evidence only of granularity, friability, adherent mucopus and contact bleeding. In each of these patients, a length of normal proximal bowel could be seen, and x-ray examination of the colon showed a normal proximal mucosal pattern. None of these patients showed evidence of proximal extension during the limited period of observation, and ten attained or sustained remission during the study period; one had several relapses.

Age at onset was available for 11 patients with CD, 14 patients with UC and 17 patients with UP. The mean age at onset was 21 years (CD group), 19 years (UC group) and 23 years (UP group). Mean age at the time of inclusion in the study was 23 years (CD group), 22 years (UC group) and 24 years (UP group).

Epidemiology

In the group of patients with IBD, the ratio of men to women was 2.05. The ratio of men to women for the Stanford study body was 2.04, so that the adjusted sex ratio for incidence of IBD is 1.00. There is considerable spread in the incidence/prevalence ratios for IBD: 1/11 for CD, 1/4.2 for UC and 1/2 for UP (Table 2). These ratios primarily reflect comparable prevalence but pronounced differences in incidence among the three groups. Although CD was the most prevalent type of IBD seen over the three-year period, there was an unexpectedly high incidence of ulcerative proctitis.

There were two black patients with IBD: one with CD and one with UC. There was one second-generation Japanese patient with UP, one Iranian with UC, and a Saudi Arabian with UP. There were 11 Ashkenazi Jewish patients in this series at a time when Jewish representation in the student body was approximately 1,100. The comparative prevalence of IBD between Jews and non-Jewish students was five and two, respectively, per 1,000. This difference is not significant ($X^2 = 2.45$, $P > 0.10$), but the trend is consistent, with a number of independent observations on the rather high prevalence of IBD among Ashkenazi Jews.

Comment

In 1963, Ray[3] and Larsh[4] noted increasing prevalence of ulcerative colitis among students at Northwestern University and at the University of Chicago, and subsequently Ray summarized experience with UC affecting students at Northwestern University over a 20-year period.[5] She observed a prevalence ranging between 12 and 15 on a year-to-year basis. These are the only previously published studies of IBD confined to the college setting, and they do not consider the problems of CD and UP.

Of particular relevance to the study of inflam-

	Incidence				Prevalence			
	Crohn Disease	Ulcerative Colitis	Ulcerative Proctitis	Total	Crohn Disease	Ulcerative Colitis	Ulcerative Proctitis	Total
1975 ...	2	2	1	5	12	9	4	25
1976 ...	1	5	11	17	13	13	11	37
1977 ...	.	..	2	2	8	8	14	30
Rate* ..	8	19	37	64	88	80	77	245

TABLE 2.—Cases of Inflammatory Bowel Disease at Stanford, 1975-1977

*Rate is the mean number of cases per year $\times \dfrac{100,000}{12,500}$ expressed as the nearest whole number.

matory bowel disease among young adults seen in college health services are the recent epidemiologic data from a series of 1,400 patients observed at the University of Chicago School of Medicine: The authors of the report on these data were able to show a striking correlation between the prevalence of IBD and the attainment of higher education.[6] Of those patients with IBD who were more than 25 years old, 59.1 percent had completed four or more years of college as compared with a national average of 7.7 percent for the same age group in the general population.

Experience with IBD at Stanford has shown a pattern of disease with relatively few complications, minimal short-term disability and a high frequency of remission. For comparison, the study of Patterson and co-workers[7] of a group of patients with ulcerative colitis that began in childhood or adolescence emphasized the severity of the disease, a formidable array of complications, and a mortality of 14 percent in a series of 43 patients.

Despite the limitations of certain epidemiologic surveys of IBD, primarily the problem of selection of patients with more severe disease, data of several recent publications are useful for comparison with those of the small Stanford series. Age-specific prevalence and incidence rates are available from a few European and American sources. A study in Oxford, England,[8] showed cumulative prevalence rates for ulcerative colitis in the age groups 14 to 24 years and 25 to 34 years of 18.2 and 65.9, respectively; the corresponding incidence rates were 4.0 and 10.9. A survey in Copenhagen, Denmark,[9] showed the prevalence of ulcerative colitis as 34 in the second and third decades, with an incidence of 8.6. A study of Crohn disease in Malmo, Sweden, showed an incidence of 18 in the second and third decades.[10] In Rochester, Minnesota, the incidence of inflammatory colon disease (UC and CD) was found to be 21 in the third decade.[11] For obvious reasons, comparisons between disease rates at Stanford and the IBD rates from the studies cited above can be only rough approximations. However, it appears that the prevalence and incidence rates for Crohn disease and ulcerative colitis in a small, well-defined college population are comparable with and possibly exceed rates that are adjusted for age from several more heterogeneous populations of northern Europe and the United States. Extrapolating from the

data of Rogers and associates[6] on the association of IBD with the degree of educational achievement, it appears that the population is stratified with respect to IBD: 73.1 percent of persons with IBD have attained some college education but represent only 16.5 percent of the total population in regard to educational status. The implication is that there is a dispersed population of patients with disabling IBD who have been unable to attend college and a small proportion who would not attend college for reasons not related to health status, and, further, that true prevalence and incidence rates may be lower for young adults than has been suggested by either the Stanford study or other recent epidemiologic surveys.

The unusually high frequency of proctitis at Stanford is matched by the proportion of patients with proctitis in a series of 108 patients with inflammatory colon disease who were diagnosed in Rochester, Minnesota, from 1935 through 1964.[11] Fifty-eight of these patients had either transient or chronic proctitis. In contrast, Farmer and Brown,[12] in a study of 1,258 patients with ulcerative colitis, found only 52 (4 percent) with disease limited to the rectum. Sparberg and co-workers[13] culled 45 patients with rectal disease only, from a group of 1,181 persons with ulcerative colitis; this again represented 4 percent of the total. In the Stanford study, proctitis constitutes more than 50 percent of the group with ulcerative colitis. There is doubtless some selective bias in the diagnosis of proctitis at this university, where virtually every patient with minor rectal bleeding is examined by proctoscope. Also, there is some question whether nonspecific proctitis represents a mild form of ulcerative colitis. Therefore, the experience at Stanford could reflect the timely diagnosis of a form of IBD that is genuinely on the increase, as the high incidence/prevalence ratio would suggest. On the other hand, Lennard-Jones and co-workers[14] found that eight of 69 patients with proctitis went on to develop proximal disease, and Sparberg and associates[13] found that ten of 29 patients with proctitis who were followed for five or more years had proctoscopic evidence of proximal extension. Nine of 21 in this group showed extension into the sigmoid in follow-up x-ray studies; only three showed progression above the sigmoid. These published reports certainly suggest that ulcerative proctitis is a mild expression

of a potentially serious and more extensive colonic disease.

Experience with inflammatory bowel disease at Stanford warrants the conclusions that ulcerative proctitis may be more frequent in young adults than has been previously appreciated and that extended studies of inflammatory bowel disease in college populations may afford a more balanced view of the natural history of both Crohn disease and ulcerative colitis together with useful information on the effects of socioeconomic, cultural and ethnic stratification on the expression of IBD.

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Techniques of Needle Spinal Insertion

ONE OF THE TRICKS that I try to teach is the slow insertion of a subarachnoid needle, identifying every structure as it is perforated with the needle. This gives one a very clear idea of where the needle is before perforating the dura. Most people tend to jab with the needle which deprives you of the feel of the needle. Another trick is to control the direction of the needle. For example, the puncture should be made close to the caudal end of the interspace and the needle should be inserted at a 90-degree angle to the skin, which we all know is too wide an angle, but in having hit the lamina, which is your next stop on your way to the subarachnoid space, the needle is pulled back a little and reinserted in a more caudal fashion until one gets back by the lamina and falls into the epidural space and into the subarachnoid space. In other words, not only should the insertion be controlled, but the direction of the needle should be controlled too, and every attempt must be made to identify every structure.

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